

Electrification and SA's Automotive Component Industry

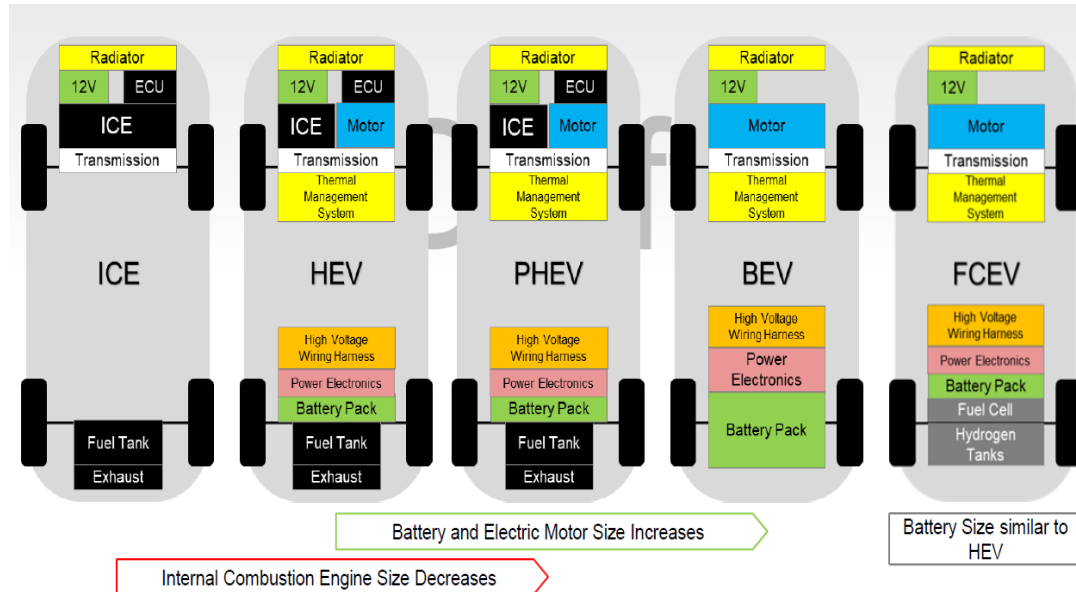
**Renai Moothilal | NAACAM Executive Director
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TIPS EV Development Dialogue

Who we are	NAACAM is recognised as the voice of the South African automotive component industry both domestically and internationally
Who we represent	<p>NAACAM is a member-driven organisation at the forefront of industry leadership, representation, and stakeholder engagement for automotive component manufacturers.</p> <p>NAACAM represents close on 150 global and local manufacturing brands spanning a wide variety of subsectors. These members supply both domestic and foreign original equipment manufacturers (OEMs) and the independent aftermarket.</p> <p>These manufacturers are supported by a band of associate members who provide specialised services across a diverse range including financial services, logistics, IT etc.</p> <p>Approximately 80 000 jobs can be found across the South African automotive component base</p>
What we do	<p>NAACAM offers multiple specialised services to support the further development of domestic component manufacturers and the automotive sector at large. This includes:</p> <ul style="list-style-type: none">• High-level industrial and trade policy representation• Influencing wage and other industrial relations• Relationship building and maintenance with key sector stakeholders• Provision of up-to-date, sector-relevant information and knowledge provision• Networking, marketing and profile building• Further business development• Best practice education and advice to members• Bespoke localisation, transformation, skills development and supplier development support

Evolution of vehicle platforms and component requirements

Comparison of powertrains



Examples of key NEV components

Battery



Electric motor + transmission



Thermal management systems



Power electronics



Hydrogen fuel cell + tanks



High voltage wiring harnesses



Comments

Main component system changes in NEVs:

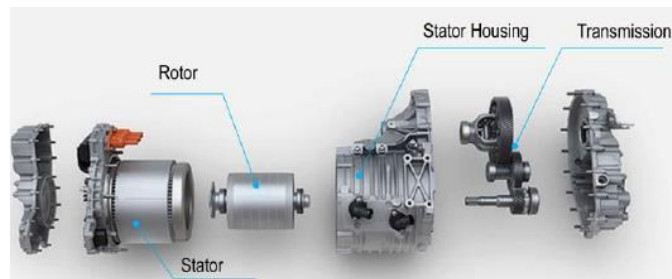
- Smaller ICE in hybrids; none in BEV or FCEV
- No fuel system and exhaust system in BEV or FCEV
- Larger batteries, power electronics across platforms
- Redesigned thermal and cooling management systems
- High-voltage wiring harnesses
- Incorporation of electric traction motors and redesigned transmission

Localisation opportunities

Identified NEV sub-componentry with high localisation potential

Electric motor & transmission (e-axle)

- Most core motor components expected to be produced in-house by OEMs such as rotor and stator
- **Electric motor and transmission** has potential to be produced locally



Key components of e-drivetrain

Power electronics sub-components

- Power electronics is expected to be one of the fastest growing sub-sectors over the next decade
- Localisation potential for **PCB Assembly and the housing**



PCB Assembly



Housing

High voltage electrical distribution

- Replacement of mechanical systems with electrical necessitates increase wiring harnesses in NEVs
- Both **high voltage wiring harnesses and the charge port** can be localised



High voltage lines



Charge port

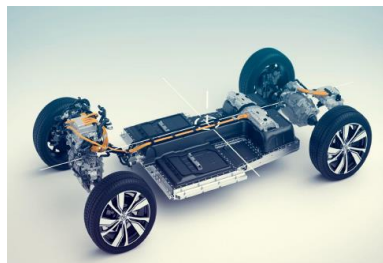
Listed localisation opportunities deemed feasible due to local availability of raw materials, companies based in SA, and manufacturing technologies required for their production

Localisation opportunities cont.

Identified NEV sub-componentry with high localisation potential

Battery & battery value chain

- Cell manufacturing not clear cut due to global capacity, OEM commonality issues & other investment & infrastructure requirements. Beneficiation input opportunity **Manganese** supply to cell manufacturers
- Raw material availability makes manufacturing the **battery management system** favourable
- Existing domestic manufacturing technologies & raw materials makes local **battery module and enclosure manufacturing** possible



Battery system

Thermal management systems

- Strong local Aluminium manufacturing sector & presence of other raw materials makes localisation of **heat spreaders, cooling plates, thermal adhesives & thermal gap pads** favourable
- Existing local players and established aluminium sector makes localisation of **HVAC components & assemblies** possible
- Existing raw materials makes production of **valves, hoses & pipes** favourable



Thermal management system

Hydrogen fuel cells & tanks

- High localisation potential for fuel cells given local presence of **PGMs & local players with IP for membrane electrode assemblies (MEAs)**
- Tank system favourable for localisation as there are existing local suppliers of **high density Polyethylene and Polypropylene** & capabilities within the aircraft industry to manufacture **carbon fibre composite**
- Fuel cell technology primarily suited to medium and heavy commercial vehicles



Hydrogen fuel cell & tank system

Localisation opportunities

High voltage battery manufacturing

Where South Africa fits into the picture

High voltage batteries are estimated to account for **approx. 30 to 40%** of the value of BEVs



By 2035, global demand is expected to grow to **6700 GWh** from **current installed capacity of 670 GWh**

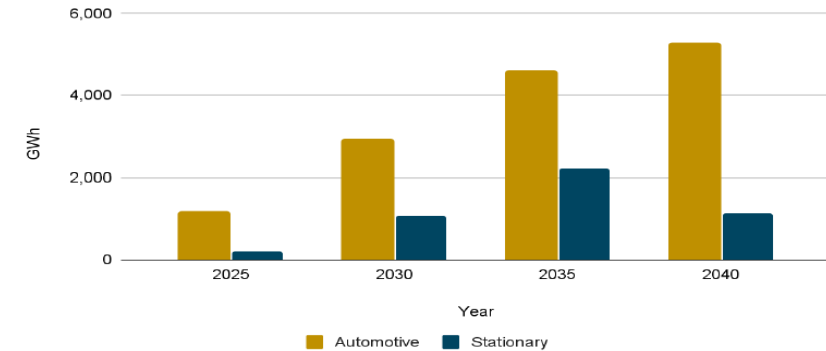


World Bank estimates **SA's battery storage market** can grow from **270 MWh in 2020 to 9 700 MWh in 2030 - base scenario and 15 000 MWh - best-case scenario**. The value chain could create **58 000 jobs**



With many of the **critical rare earth metals available in the SSA region**, Africa is in a good position to **beneficiate the materials and manufacture batteries**

Forecasted Annual Battery Demand 2025-2040 (Global)



What is the business case for South Africa?

- A well-supported sector with long standing government policy,
- SA is strategically located with numerous ports,
- Access to key raw materials,
- An existing manufacturing capability providing both key technologies and skilled labour

What is needed to support local battery manufacturing?

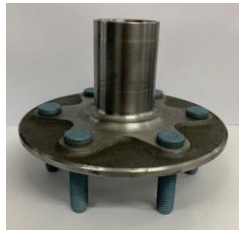
1. Policy and programme alignment between SADC countries to allow for beneficiation of raw materials locally
2. Good rail logistics corridors for transport of minerals
3. Demand certainty led by OEMs but also built around industrial storage parallels

Existing production into NEV platforms

NAACAM members have already commenced exporting production to electric vehicle

Forged components

Locally owned foundry and forge business is exporting wheel hubs to the US as a Tier 2. They are used in the production of a high-volume electric vehicle launched in the US in mid-2022



Wheel hub

Beneficiated Materials

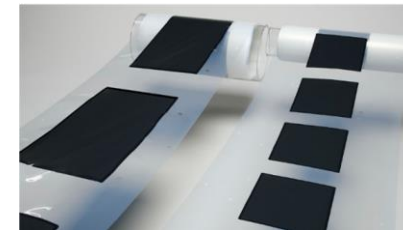
A manufacturer of processed raw materials has a large export contract with an OEM for the supply of components into the battery housing of their EV range.



Battery housing

Fuel cells

High-tech fuel cell and electrolyser component manufacturing facility currently being established to produce PGM-containing membrane electrode assemblies (MEAs)



MEAs

Key points:

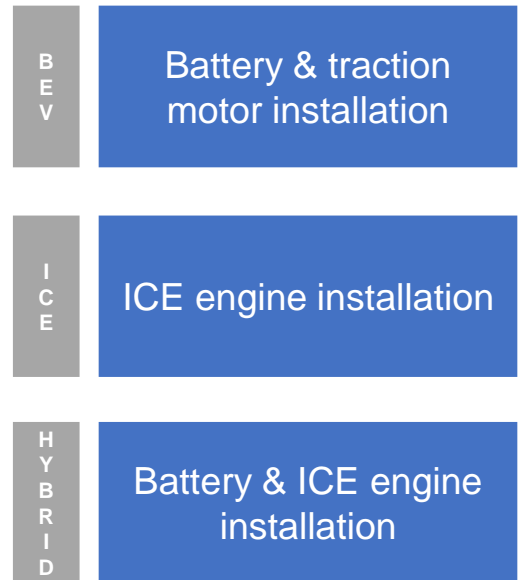
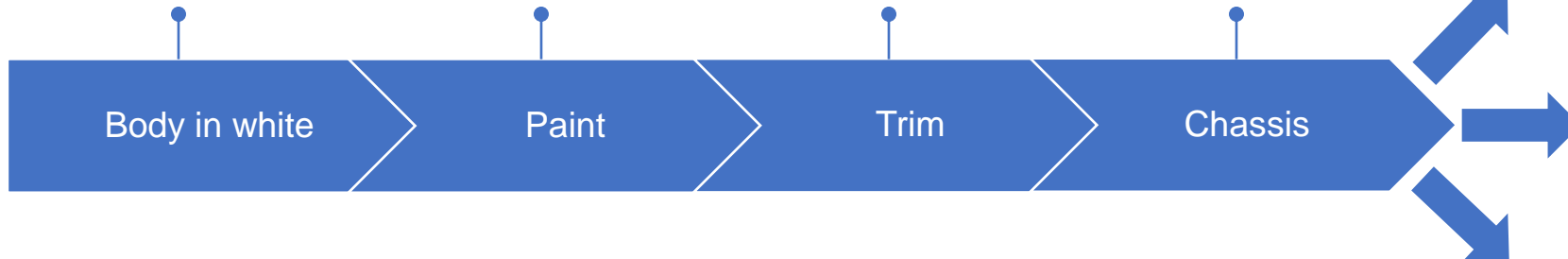
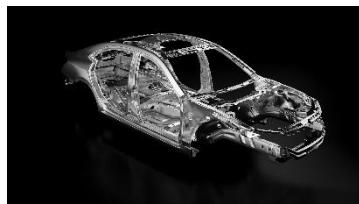
1. While these are examples of what local suppliers are already producing for NEVs, it is worthwhile that **a large cohort of NAACAM members are multinational companies, whose sister plants across the globe are already producing components for NEVs and have NEV-specific R&D** which could be on-shored by the local subsidiaries
2. **Many components produced locally are not power-train specific** meaning they already have the technologies and capabilities to support domestic NEV production
3. SA based component companies have been **responding to technology changes** for years, as facelift and new models emerge.

Vehicle Assembly Process



Tier 1 component inputs

OEM PRODUCTION LINE



Some tier 1 components differ between powertrain platforms but change to NEVs does not materially influence vehicle assembly up to chassis

IAA Mobility (Munich, Sep 2023): All about electrification

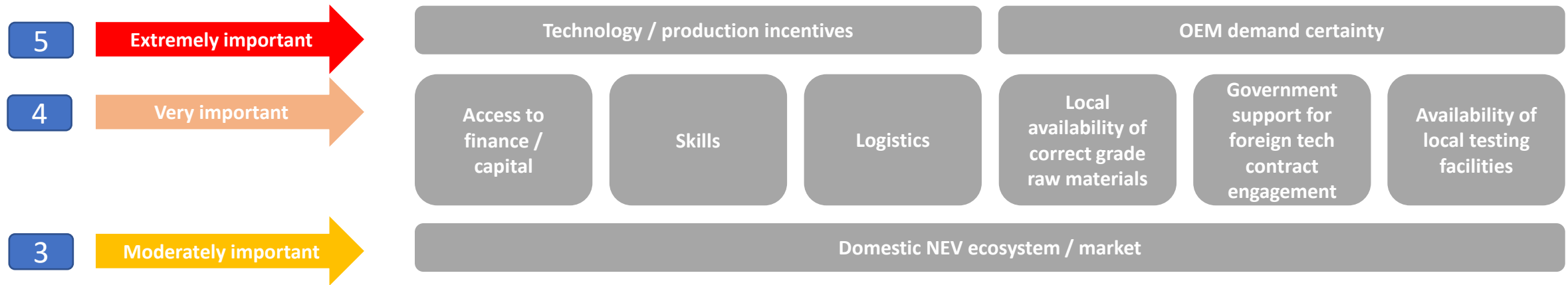


IAA Mobility exhibitors with South African presence



NAACAM Position: Enabling the NEV transition

Sample of NAACAM members spread across different subsectors were asked to indicate the importance of various enabling factors for an NEV component manufacturing transition from 1 to 5, with 1 being 'not important' and 5 being 'extremely important'



* Domestic NEV ecosystem while seen as only moderately important by component manufacturers in a business case for production, remains a part of OEM decisions to produce NEVs locally and will impact OEM demand certainty which is extremely important for component manufacturers

NAACAM policy position following TIPS (2022) policy recommendations

Demand-side: NEV grant for new vehicle purchases (cR80k for BEV, cR40k for PHEV, cR20k for HEV)

Demand/supply side: Align EU SA EPA tariffs with ICE 18% preference

Supply side: Reduce CKD duty on NEV components to 10%, but with assembly conditions

Investment support: NEV investments to receive 50% AIS (no distinction between OEMs and component firms)



10 Actions in support of the development of SA EV productive capacity

1. **Increasing the levels of investment** in auto assembly and component manufacturing
2. Facilitating and developing an **electric battery regional value chain**
3. **Temporarily reducing import duties for batteries** in vehicles produced and sold in the domestic market
4. **Securing or maintaining duty-free market access** for vehicles and components produced in SA
5. Leveraging **R&D tax incentives** to deepen domestic value addition
6. **Commercialising green hydrogen production** as a sustainable fuel
7. Implementing **energy reforms**
8. Implementing **reforms to network industries**, including freight and rail
9. Refurbishing the **rail line between Gauteng and Ngqura**
10. Developing an **EV certification programme for skills development**

NAACAM response to the White Paper

NAACAM welcomes the production-led approach of the White Paper that will prioritise the continued growth and development of local manufacturing capability and capacity.

The Paper balances general competitiveness-enhancing measures such as energy and network industries reforms while also providing support to technology / R&D investments in NEV products and componentry.

The Paper is also measured in its approach to possible future dominant vehicle technologies through the inclusion of support for developing both an electric battery value chain and commercialising green hydrogen production

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